

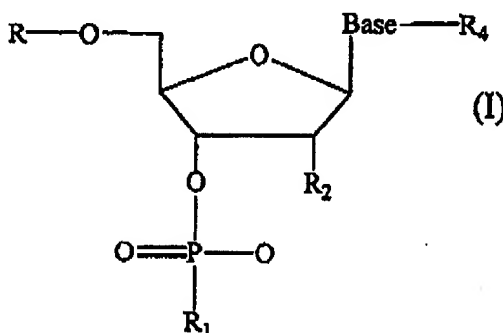
In re: Serial No.: 09/747,467

Page 4 of 13

In the claims:

Please amend the claims as shown below by deleting the material indicated by strike-through and adding the underlined material. This listing of claims will replace all prior versions and listings of claims in this application.

1 (currently amended). An antibody that specifically binds to a synthetic oligonucleotide having an organic protecting group covalently bound thereto, which antibody does not bind to said synthetic oligonucleotide when said organic protecting group is not covalently bound thereto;



wherein:

(i) said protected nucleotide of Formula I is a 3' nucleotide; R is a covalent bond to an adjacent nucleotide; R₁ is a protecting group; R₂ is H or -OH; R₄ is absent; and Base is a purine or pyrimidine base; or

(ii) R is a covalent bond to an adjacent nucleotide; R₁ is a covalent bond to an adjacent nucleotide; R₂ is -OR₃; R₃ a protecting group; R₄ is absent; and Base is a purine or pyrimidine base; or

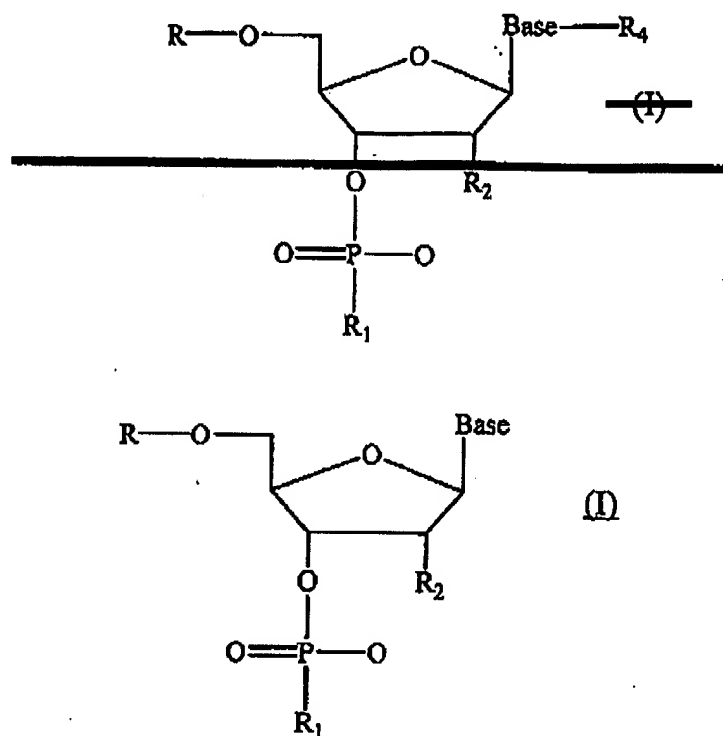
(iii) R is a covalent bond to an adjacent nucleotide; R₁ is a covalent bond to an adjacent nucleotide; R₂ is H or -OH; Base is a purine or pyrimidine base; and R₄ is a protecting group bonded to an amino group of said base.

2-3 (cancelled).

In re: Serial No.: 09/747,467

Page 5 of 13

2 ~~4~~ (currently amended). The antibody according to claim 1, wherein said oligonucleotide consists of from 3 to 20 nucleotides and has a 3' nucleotide, and wherein said 3' nucleotide is a protected nucleotide according to Formula (I):



wherein:

R is a covalent bond to an adjacent nucleotide;

R₁ is a protecting group;

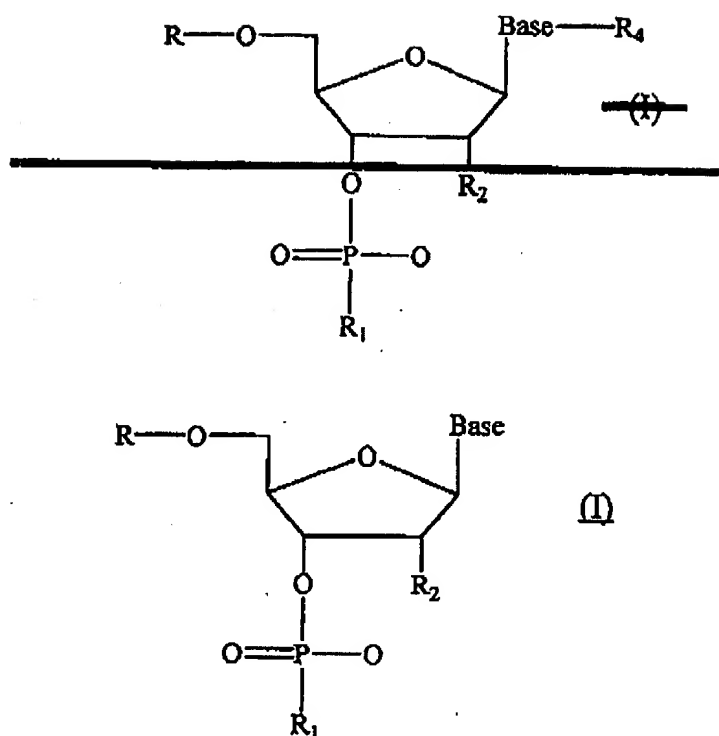
R₂ is H or -OH; and

Base is a purine or pyrimidine base.

3 ~~5~~ (currently amended). The antibody according to claim 1, wherein said oligonucleotide consists of from 3 to 20 nucleotides, and wherein one of said nucleotides is a protected nucleotide according to Formula (I):

In re: Serial No.: 09/747,467

Page 6 of 13



wherein:

R is a covalent bond to an adjacent nucleotide;

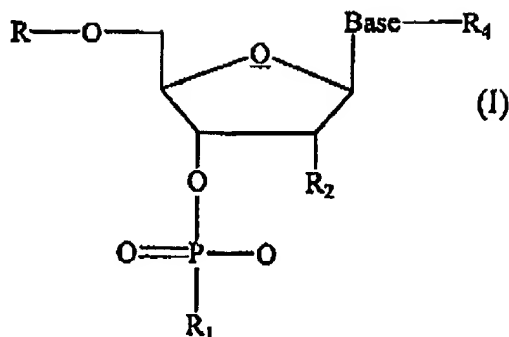
R₁ is a covalent bond to an adjacent nucleotide;R₂ is -OR₃;R₃ a protecting group; and

Base is a purine or pyrimidine base.

6 (previously presented). The antibody according to claim 1, wherein said oligonucleotide consists of from 3 to 20 nucleotides, and wherein one of said nucleotides is a protected nucleotide according to Formula (I):

In re: Serial No.: 09/747,467

Page 7 of 13



wherein:

R is a covalent bond to an adjacent nucleotide;

R₁ is a covalent bond to an adjacent nucleotide;R₂ is H or -OH;

Base is a purine or pyrimidine base; and

R₄ is a protecting group bonded to an amino group of said base.

5/11 (previously presented). The antibody according to claim 1, wherein said oligonucleotide consists of from 3 to 20 nucleotides, and wherein one of said nucleotides is a protected with a photolabile protecting group.

6/8 (previously presented). The antibody according to claim 1, which antibody is a polyclonal antibody.

7/9 (previously presented). The antibody according to claim 1, which antibody is a monoclonal antibody.

8/10 (previously presented). The antibody according to claim 1 immobilized on a solid support.

In re: Serial No.: 09/747,467

Page 8 of 13

9 11 (currently amended). An isolated cell that expresses an antibody according to claim 9.

10 12 (previously presented). The cell according to claim 11⁹, which cell is a hybridoma.

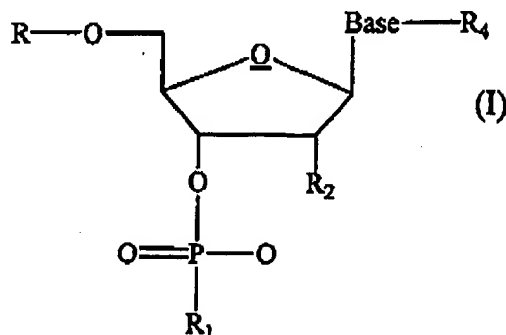
13 (cancelled).

14. (currently amended) A method for detecting incomplete deprotection of a synthetic oligonucleotide by immunoassay, said immunoassay comprising the steps of:

contacting a synthetic oligonucleotide to an antibody, wherein said synthetic oligonucleotide is produced by the process of protecting and then deprotecting a precursor molecule thereof, and wherein said antibody specifically binds to a synthetic oligonucleotide having an organic protecting group covalently bound thereto, which antibody does not bind to said synthetic oligonucleotide when said organic protecting group is not covalently bound thereto; and then

detecting the presence or absence of binding of said antibody to said synthetic oligonucleotide, ~~the presence of binding indicating incomplete deprotection of said synthetic oligonucleotide;~~ *wherein the said antibody is labeled*

wherein said oligonucleotide contains a protected nucleotide according to Formula (I):



In re: Serial No.: 09/747,467

Page 9 of 13

wherein:

(i) said protected nucleotide of Formula I is a 3' nucleotide; R is a covalent bond to an adjacent nucleotide; R₁ is a protecting group; R₂ is H or -OH; R₄ is absent; and Base is a purine or pyrimidine base; or

(ii) R is a covalent bond to an adjacent nucleotide; R₁ is a covalent bond to an adjacent nucleotide; R₂ is -OR₃; R₃ a protecting group; R₄ is absent; and Base is a purine or pyrimidine base; or

(iii) R is a covalent bond to an adjacent nucleotide; R₁ is a covalent bond to an adjacent nucleotide; R₂ is H or -OH; Base is a purine or pyrimidine base; and R₄ is a protecting group bonded to an amino group of said base.

¹¹
~~12~~ 15. (previously presented) The method according to claim ¹¹14, wherein said immunoassay is a heterogeneous immunoassay.

¹¹
~~13~~ 16. (previously presented) The method according to claim ¹¹14, wherein said immunoassay is a homogeneous immunoassay.

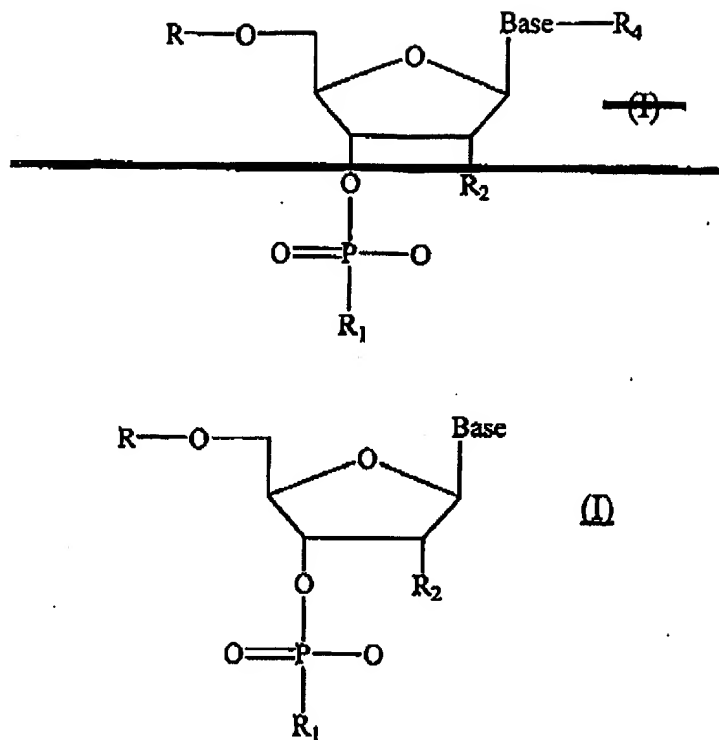
¹¹
~~14~~ 17. (previously presented) The method according to claim ¹¹14, wherein said immunoassay is a sandwich assay.

¹¹
~~15~~ 18. (previously presented) The method according to claim ¹¹14, wherein said oligonucleotide is immobilized on a solid support.

Claims 19-57 (cancelled).

¹¹
~~16~~ 58. (currently amended) The method according to claim ¹¹14, wherein said antibody binds to a synthetic oligonucleotide consisting of from 3 to 20 nucleotides and having a 3' nucleotide, and wherein said 3' nucleotide is a protected nucleotide according to Formula (I):

In re: Serial No.: 09/747,467
Page 10 of 13



wherein:

R is a covalent bond to an adjacent nucleotide;

R₁ is a protecting group;

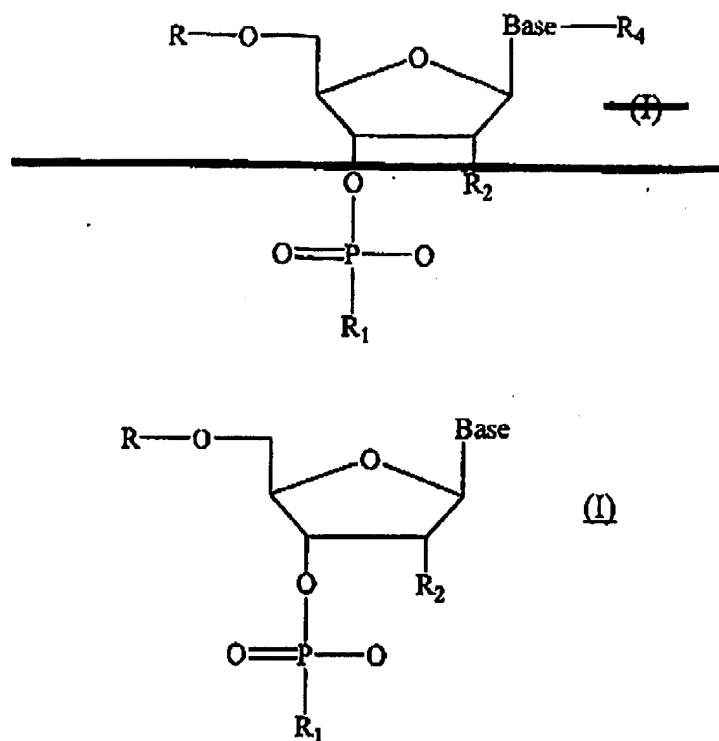
R₂ is H or -OH; and

Base is a purine or pyrimidine base.

17.59. (currently amended) The method according to claim 14, wherein said antibody binds to a synthetic oligonucleotide consisting of from 3 to 20 nucleotides, and wherein one of said nucleotides is a protected nucleotide according to Formula (I):

In re: Serial No.: 09/747,467

Page 11 of 13



wherein:

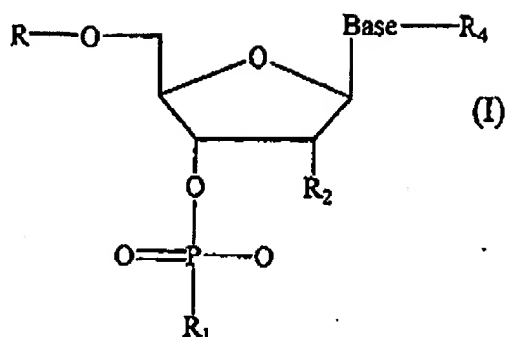
R is a covalent bond to an adjacent nucleotide;

R₁ is a covalent bond to an adjacent nucleotide;R₂ is -OR₃;R₃ a protecting group; and

Base is a purine or pyrimidine base.

18 60. (previously presented) The method according to claim 14, wherein said antibody binds to a synthetic oligonucleotide consisting of from 3 to 20 nucleotides, and wherein one of said nucleotides is a protected nucleotide according to Formula (I):

In re: Serial No.: 09/747,467
Page 12 of 13



wherein:

R is a covalent bond to an adjacent nucleotide;

R₁ is a covalent bond to an adjacent nucleotide;

R₂ is H or -OH;

Base is a purine or pyrimidine base; and

R₄ is a protecting group bonded to an amino group of said base.

¹⁹
61. (previously presented) The method according to claim ¹¹14, wherein said antibody binds to a synthetic oligonucleotide consisting of from 3 to 20 nucleotides, and wherein one of said nucleotides is a protected with photolabile protecting group.

²⁰
62. (previously presented) The method according to claim ¹¹14, wherein said antibody is a polyclonal antibody.

²¹
63. (previously presented) The method according to claim ¹¹14, wherein said antibody is a monoclonal antibody.